

Esercitazione sull'integrazione di funzioni razionali fratte

1) $\int \frac{x-7}{4x^2+x-18} dx$	($\Delta > 0$)	$= \frac{37}{68} \ln \left x + \frac{9}{4} \right - \frac{5}{17} \ln x-2 + c$
2) $\int \frac{3x-1}{25x^2+20x+4} dx$	($\Delta = 0$)	$= \frac{3}{25} \ln 5x+2 + \frac{11}{25(5x+2)} + c$
3) $\int \frac{7x+1}{x^2+x-6} dx$	($\Delta > 0$)	$= 3 \ln x-2 + 4 \ln x+3 + c$
4) $\int \frac{12x-15}{2x^2-11x+5} dx$	($\Delta > 0$)	$= \ln 2x-1 + 5 \ln x-5 + c$
5) $\int \frac{7x+1}{4x^2+12x+9} dx$	($\Delta = 0$)	$= \frac{7}{4} \ln 2x+3 + \frac{19}{4(2x+3)} + c$
6) $\int \frac{1-x}{9x^2+6x+1} dx$	($\Delta = 0$)	$= -\frac{1}{9} \ln 3x+1 - \frac{4}{9(3x+1)} + c$
7) $\int \frac{x}{25x^2-10x+1} dx$	($\Delta = 0$)	$= \frac{1}{25} \ln 5x-1 - \frac{1}{25(5x-1)} + c$
8) $\int \frac{10x-1}{2x^2+x+3} dx$	($\Delta < 0$)	$= \frac{5}{2} \ln (2x^2+x+3) - \frac{7}{\sqrt{23}} \operatorname{arctg} \left(\frac{4x+1}{\sqrt{23}} \right) + c$
9) $\int \frac{dx}{1+(5x-3)^2}$	($\Delta < 0$)	$= \frac{1}{5} \operatorname{arctg} (5x-3) + c$
10) $\int \frac{dx}{2x^2+4\sqrt{2}x+5}$	($\Delta < 0$)	$= \frac{1}{\sqrt{2}} \operatorname{arctg} (\sqrt{2}x+2) + c$
11) $\int \frac{3x-5}{4x^2+12x+11} dx$	($\Delta < 0$)	$= \frac{3}{8} \ln (4x^2+12x+11) - \frac{19}{32} \operatorname{arctg} \left(\frac{2x+3}{\sqrt{2}} \right) + c$
12) $\int \frac{x^2+3x-1}{x(x^2+4)} dx$	Risulta	$\frac{x^2+3x-1}{x(x^2+4)} = -\frac{1}{4x} + \frac{5x+12}{4(x^2+4)}$
	Risposta	$-\frac{1}{4} \ln x + \frac{5}{8} \ln (x^2+4) + \frac{3}{2} \operatorname{arctg} \left(\frac{x}{2} \right) + c$